

CLAIMS

1. A rotary fluid device comprising a rotation mechanism (20), the rotation mechanism (20) including: a cylinder (21) having an annular cylinder chamber (50); an annular piston (22) which is accommodated in the cylinder chamber (50) to be eccentric relative to the cylinder (21), the annular piston (22) dividing the cylinder chamber (50) into an outer working chamber (51) and an inner working chamber (52); and a blade (23) placed in the cylinder chamber (50) and partitioning each of the working chambers (51, 52) into a high-pressure space and a low-pressure space, the cylinder (21) and the piston (22) being relatively rotatable,

wherein one of the two working chambers (51, 52) constitutes a compression chamber which compresses and discharges a sucked fluid with the progress of the relative rotation of the cylinder (21) and the piston (22), and

15 the other of the two working chambers (51, 52) constitutes an expansion chamber which expands and discharges a sucked fluid with the progress of the relative rotation of the cylinder (21) and the piston (22).

2. The rotary fluid device of claim 1, further comprising a suction mechanism (60) which allows the refrigerant to be introduced into the expansion chamber (52) in a predetermined 20 rotation angle range of the piston (22) such that an expansion process of the fluid in the expansion chamber (52) occurs in a predetermined range within one rotation cycle of the piston (22) relative to the cylinder (21).

3. The rotary fluid device of claim 1, wherein:
25 the compression chamber (51) is a working chamber formed outside the cylinder chamber (50); and

the expansion chamber (52) is a working chamber formed inside the cylinder chamber (50).

4. The rotary fluid device of claim 1, further comprising a drive mechanism (30) for
5 driving the rotation mechanism (20),

wherein the rotation speed of the drive mechanism (30) is variably controlled.

5. The rotary fluid device of claim 1, wherein:

the piston (22) has the shape of C formed by removing a part of its annular

10 structure to make a slit;

the blade (23) extends between an inner peripheral wall surface and an outer peripheral wall surface of the cylinder chamber (50) through the slit of the piston (22);

a swing bush (27) is provided in the slit of the piston (22), the swing bush (27) being in surface contact with the piston (22) and the blade (23) such that the blade (23) is reciprocatable and the blade (23) is swingable relative to the piston (22).